

November, 1972

FROM THE PEN OF



YELLOW CANARY FEATHERS BY MIKE WOLVJ.



BEFORE I START OUT THIS MONTH I WOULD LIKE TO POINT SOME THING OUT. I WAS PROMISED MATERIAL TO PUT IN THIS MONTH'S ISSUE OF ZERO BEAT, AS YOU CAN SEE I'M LACKING SOME TO FILL THIS ISSUE. EVERY ONE WANTED LOCAL NEWS AND NOT STUFF THAT WOULD APPEAR IN QST EVENTUALLY. WELL, IF IT AIN'T HEAD NEWS IT WON'T GET PRINTED. ENOUGH OF THIS DILLY DALLY..... FROM NOW ON THE DEADLINE FOR MATERIAL IS THE END OF THE 2nd WEEK OF EVERY MONTH.

THE OTHER DAY (SUNDAY THE 20th of Oct) (THE DAY AFTER I PICKED UP K075 20 METER KIT) I HAD TO SCRIP MY VERTICAL AND BUILT ANOTHER ANT. WELL, SEEING HOW I'D BROKE I DECIDED TO BUILD A DIPOLE FROM WHAT I HAD. A FRIEND OF MINE CAME OVER AND WANTED TO HELP FINISH IT. I SLEW OF COURSE AND TRODDED HIM. MAH AND NO. TO DO IT. (MADE FROM BUILDING A 1:1 to 1 SWR) I PROCEEDED TO LOAD THE KIT UP. THEN AFTER TUNING AROUND FOR A WHILE I FOUND SOMEONE CALLING Q. I WENT BACK TO THE KIT AND RE-BUILT A 1:1. IN ABOUT 3 MINUTES THIS TURNED INTO A POPULAR PLACE FOR EVERYONE TO TALK. WE BOTH DECIDED TO QRTZ AND LET IT GO AT THAT. THEN I FOUND A CLEAR SPOT. AND JOURNAL CALLING Q. I AM HAMMED IMMEDIATELY AND DRAINED A 1:1. AGAIN THE SAME THING HAPPENED AND I WAS FORCED TO QRTZ. HE ALSO TELLED ME I FOUND ANOTHER PERSON CALLING Q. I WAS LUCKY AND MADE CONTACT AND FIRST CALL. WAIT ANOTHER ABOUT 10 MINUTES AND HE QRTZ, BUT I DECIDED THAT I WOULD IF I QRTZ UP 1:1. THAT I COULD FIND A CLEAR SPOT. I HAD TO TUNE AND I WAS FORCED TO QRTZ. AT THIS POINT MY FRIEND (WHO BY THE WAY IS A EX-OPER) ASKED ME HOW COME I SOUNDED LIKE CH-20 AND EVERYBODY TALKED OVER EVERYONE ELSE LINE OR CH. HE ALSO KNOWS THAT THE HAMS HAVE QUITE A FEW HAMDS TO SPINATE ON. I COULD NOT THINK OF ANY QSL'S LIKE THAT WOULD EVER COME CLOSE TO EXPLAINING THIS. NOW I TALKED A LITTLE MORE, TALKED A LITTLE MORE OFF THE AIR FOR A WHILE OVER A KAR, BUT I STILL DID NOT HAVE AN ANSWER. I KNOULD NOT BELIEVE THERE IS ONE.....

WHAT COULD YOU CALL A NEW COMER IN A SITUATION LIKE THIS, AND BE TELLING THE TRUTH-ESPECIALLY A QSL???

*Mike
Wolvj*

* #390 September 14.

FCC has now acted in the matter of Docket 19163, regarding the Extra Class license. Effective October 27, 1972, the rules will be amended to provide a waiting period of one year under license, rather than two, as a condition of eligibility to take the extra exam. Present holders of Advanced Class who at one time held the old Amateur Extra First ticket and have been continuously licensed since, will get credit for the 20 wpm code test for the extra exam. Such credit will also be granted holders of certain commercial operator licenses where the code requirement is comparable. Further details will appear in November QST.

A gemini--is a screwball who makes a crackpot idea work.

MEMO TO ZERO BEAT .

CONTRIBUTORS

Typed material would be appreciated. This saves the editor time and prevents errors. Your typed material will be edited if space requirements dictate. Please make your material not more than three and one-half inches wide.

Schematics or drawings can also be reproduced by our printer. But, please, make them in ink or very dark pencil. Use a marking type pen if you like.

THYRISTORS

What is a thyristor? It is any semi-conductor switch whose bistable action depends on p-n-p-n regenerative feedback. Thyristors can be two, three, or four terminal devices, and both unidirectional and bi-directional devices are available.

The most famous unidirectional thyristor is the SCR, silicon controlled rectifier. Others are SJS, silicon unilateral switch; LASCR, light activated silicon controlled rectifier; CSCR, complementary silicon controlled rectifier; GTO, gate turn-off switch; PUT, programmable unijunction transistor; and the SCS, silicon controlled switch. Shockley diode is a reverse blocking diode thyristor.

Pikes Peak Radio Amateur Association Inc.
Colorado Springs, Colorado

Member

Amateur Radio
News Service

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Copy deadline for ZERO BEAT is SECOND WEEK of each month

Ed Pompea, Business Manager CHARLES SMITH: DISTRIBUTION
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635-7353

The PPRAA meets the second Wednesday of each month
Securit Savings East, East Platte at Union Blvd.



PRESIDENT'S COLUMN

We had scarcely finished our election at the October meeting when our newly elected President, Bill King submitted his resignation due to unforeseen developments. The PPRAA By-Laws provide that the Vice-President automatically becomes President. I will do my best in this capacity, and with the help of each and every member we can make PPRAA a better club than ever before.

At the November meeting we will hold an election to fill the one vacancy on the Board of Directors, then elect a new Vice-President from the five board members who are not already holding office.

During my tenure as President, I intend to make PPRAA responsive to the interests of its members in the FURTHERANCE OF AMATEUR RADIO. In this light, the theme I intend to pursue is participation by the club members, especially at the monthly meetings. If you're interested enough to come to the meetings, certainly you have something of interest to pass on to other members.

Along this same theme, there is no reason we can't fill the Beat each month with news of local AMATEUR RADIO activities. If you are proud of your particular AMATEUR RADIO activities, tell us why. If you tell others about it, you just may encourage them to try it too.

I anticipate that the monthly club meeting programs will be devoted to radio communications, in particular, AMATEUR RADIO. If you're looking for programs on other subjects, you're in the wrong club.

Hope to see you all at the meeting November 8th. Let's make PPRAA an AMATEUR RADIO club we can all be proud to be members of.

73, Wayne, W2TPV/0

CHRISTMAS PARTY

The December meeting is to be at Dott's. Don't show up at the usual meeting place, as the gang won't be there. Instead we will meet at Dott's Fine Food Restaurant, Saturday December 2nd at 1930 South Nevada, for a delicious dinner and entertainment. The cost will be \$3.00 for a fried chicken dinner or \$3.50 for a roast beef dinner. The festivities will start at 6:00 pm and the dinner at 7:00 pm. Please confirm your reservations no later than November 15, by calling Chuck at 632-0743 or Wayne at 598-7096. Come on out for a great evening of entertainment and fun.

Chuck

At the November meeting we will be voting for one board member and a Vice-President. So please! Your vote counts!

Dues for 1973 will soon be due. You can get an application at this month's meeting. Please print clearly or type. Send or give dues and the filled out application to your treasurer "Irv" Ebel. Dues are: \$2.00 for associate membership and \$3.00 for full membership. Just add \$1 and the whole family is taken care of!

PPRAA DIRECTORS

PRESIDENT		
WAYNE BROWN	W2TPV/0	2829 SHADY DRIVE 80907 598-7096
VICE PRESIDENT		
IRVIN K. EBEL	WØKVV	1224 NORTH CUSTER 80903 473-3630
SECRETARY		
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TREASURER		
MICHAEL D. PAYNE	WØLVJ/A70XA	2312 WEST PIKES PEAK AVE. 80904 471-9362
MEMBER OF THE BOARD		
PETE DE TARIO	KØUUG	1310 KINGSLEY DRIVE 80909 596-3633
PRESIDENT		
JULIAN D. CORNELL	WØACT	721 LANDING DRIVE 80909 598-4216

Remember: when the club asks for money for the Repeater - GIVE. Just a little from everyone will help lots. And for the people that use KØIV a five or ten spot would really be appreciated.

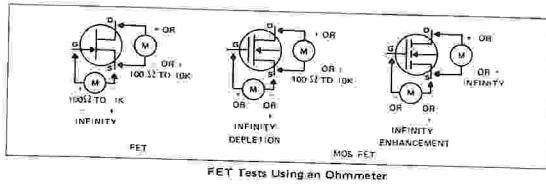
THURS

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304 EAST DEL NORTE
COLORADO SPRINGS, COLORADO 80907
TELEPHONE (303) 632-4467

Circuit News



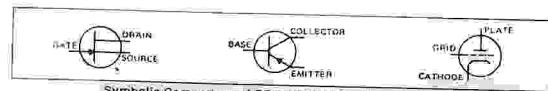
FET Tests Using an Ohmmeter

SAD NEWS

Mrs. Bernice Mintz, wife of Max Mintz, of D & M Electronics Supply, passed away November 2. She was active in the operation of the business for the past 20 years. Local amateurs always received a cheery smile from her. Services were held at Swan Funeral Home Nov. 3. We all extend our condolences to Max.

Characteristics Comparison of FET's, Transistor, and Vacuum Tube

Characteristic	J FET	MOS FET	Transistor	Tube
Impedance (Input) (typical in ohms)	High (10 meg)	Very high (100 meg)	Medium to low (1000)	Very high (100 meg)
Average Life	Long	(Long, see text)	Long	Short
Gate/Base/Grid Current (typical, in amperes)	1×10^{-9}	1×10^{-12}	1×10^{-6}	1×10^{-9}
Noise (Internal)	Low	Low (variable)	Medium to low	Low
Amplification Factor	Low	Low	Low to high	Low to high



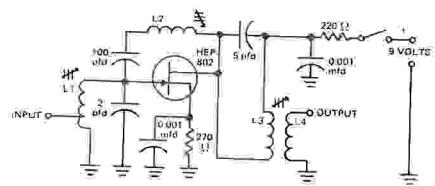
Symbolic Comparison of FET, Bipolar Transistor, and Vacuum Tube

2-METER (150 MHz) PREAMPLIFIER

USES:

Provides Low-Noise Amplification Ahead of 14dB Gain at Low Noise Receiver

FEATURES:



PARTS LIST:

- 1 HEP 802
- 1 Ceramic Capacitor, 0.001 mfd, 10V
- 1 Mica Capacitor, 2 pfd, 10V
- 1 Mica Capacitor, 5 pfd, 10V
- 1 Mica Capacitor, 100 pfd, 10V
- 1 Resistor, 220 Ω, 1/2 Watt, ± 10%
- 1 Resistor, 270 Ω, 1/2 Watt, ± 10%
- 1 SPST Switch
- 1 9 Volt Battery

(All coils wound on brass-tug ceramic form)
 L1 5 1/4 turns, tapped at 1 1/4 turns, #26
 L2 9 1/2 turns, #34
 L3 5 turns, #26
 L4 1 1/4 turn, #26, at low end of L3

NOTE: All leads should be kept as short as possible (pc board is recommended)

EMERY STUDIO

PORTRAITS – COMMERCIAL
PICTURE FRAMING

DON EMERY W6DYU

1 Block W. of Academy Blvd. between
Palmer Park Blvd. & Constitution Ave.

3730 E. La Salle Telephone 597-0026

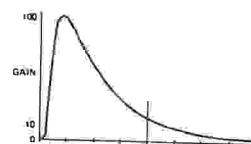
BROADBAND RF AMPLIFIER

USES:

Amplifies RF Signals Over the Range of 1 MHz to 40 MHz

FEATURES:

High Input Impedance
High Signal-to-Noise Ratio



PARTS LIST:

- 1 HEP 802
- 1 HEP 51
- 1 Resistor, 1 meg, 1/2 Watt, ± 10%
- 1 Resistor, 1K, 1/2 Watt, ± 10%
- 1 Resistor, 4.7K, 1/2 Watt, ± 10%
- 1 Resistor, 470 Ω, 1/2 Watt, ± 10%
- 2 Resistors, 270K, 1/2 Watt, ± 10%
- 2 Ceramic Capacitors, 0.01 mfd, 25V
- 3 Ceramic Capacitors, 0.003 mfd, 25V
- 1 SPST Switch
- 2 9 Volt Batteries

DX

DX originally meant distant, or distance, for those early radio pioneers who wanted to work outside their immediate locale. As equipment improved, and more was learned about this strange hobby of ours, the meaning was gradually changed to mean outside the state, country, and eventually, outside the continent. Today the general interpretation of DX, as applied to the HF bands, means outside the country. Avid U.S. DXers generally mean outside the North American Continent.

There are approximately 325 countries as defined by the ARRL DX Committee. Although there are only some 156 independent countries in the world, ARRL applies many criteria to define and increase the country list so those of us who enjoy this phase of the hobby always have a "new" country looming in the future. Some of the criteria are: geographical separation by foreign land, separation by water and by government administration. Interestingly enough, ARRL refuses to recognize East Germany or Berlin as falling into any of these areas.

Another award is the DXCC, working various totals and/or combinations of countries. ARRL awards the DXCC for 100 countries worked and confirmed. While DXCC was difficult to obtain at one time, today it is possible to work over 100 countries during a single weekend...hence the competition to push your total towards 325.

The International Short Wave League offers the Century Club Award and the Radio Club of Argentina applies a slight variation by requiring 101 confirmations to win the 101 Award.

Probably the most coveted DX award is the Worked All Zones, or WAZ, offered by CQ Magazine. Rather than rely on rather nebulous boundaries, they divided the world into 40 zones and confirmations from all 40 are required to win the WAZ. Your writer was fortunate in getting WAZ #1393 in 1960. Next month I hope to discuss some of the methods and procedures used to work not only the more common countries, but how to go after those elusive "rare" ones.

Since this is our first column, we are working with a limited input for who is working what from the Pike's Peak area. Please

notify me as to what you are working, and when, so it may be included in future columns.

Wayne, W2TPV/0 has been working numerous JA stations on 21 mhz SSB. Russ, WB0GKF, worked F8RU and HB9AJI on 21cw, using a Ranger and a dipole only 10 inches above the roof. Since those are my only inputs, I must rely on my own log to demonstrate some of the DX that was being heard in this area during October.

14mhz 0200-0400Z
CR7BN, ZS1FF, ZS5KI, UK9KAD, UL7CT, UA0SP, CE3CB and CP5BC.

21mhz 1400-1700Z
HA5KKB, OH2RL, YU2ACD, OK3DG, UK1AAG, F8RU, DK6ML, I1PZ, EA2IA, ON4AW, GI3YFY, SM3AT, LZ1KEZ and PA0CWS.

21mhz 2300-0200Z
HM5EE, VK2EG, PY3CBX, VK6HD and JAs all over the place.

28 MHZ

FG0AMC/FS7---1500Z, PZ5CW---1510, CR6AD---1845 and ZL3AB---2200.

As you can see, more reports are needed from you DXers. Mail them to me at 1927 Wynkoop Drive, 80909 or phone them in at 596-1912 during the evening.

73, Dale, W0LDV

FOR SALE

HALLICRAFTERS SR-400 XGVR---400 WATTS PEP, HA-20 CONSOLE FOR SPLIT OPERATION EQ/W SWR BRIDGE, AC & DC PWR SUPPLIES HALLICRAFTERS MOBILE MOUNT, HUSTLER MOBILE ANTENNA & COILS FOR 15-20-40 PACKAGE \$695. WILL CONSIDER SEPARATE DALE, W0LDV, 596-1912

NOVEMBER 8 MEETING

Dale Green, W0LDV, will be our speaker on Nov. 8. He has promised an amusing and informative program entitled, "COMMUNICATIONS FOR LADY GODIVA".

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TOM'S MICROWAVE CORNER

CONDUCTED BY **TOM SEGRAVES**

UNIVERSITY

PROPAGATION AT MCROW FREQS

PART 3: COMMUNICATION LIMITATIONS

THE ATMOSPHERE AND/OR POOR PLANNING IN THE INSTALLATION OF MCROW SYSTEMS CAN SPELL THE DOOM OF ESTABLISHING COMMUNICATIONS. THIS IS A TOPIC FOR THE COMPLETION OF PROPAGATION. I WILL POINT OUT SOME OF THE CONDITIONS THAT EFFECT MCROW IN THE ATMOSPHERE AND A FEW AREAS TO WATCH FOR IF YOU EVER DECIDE TO PLAY AROUND WITH MCROW. RADIO WAVES WILL TRAVEL, IN A VACUUM, NEARLY 186,000 MILES PER SECOND, OR IF YOU PREFER 330 YARDS IN A MICROSECOND. IN ALMOST ANY OTHER MEDIUM, HOWEVER, THEIR VELOCITY WILL BE SLOWER THAN THAT OF A VACUUM. ALSO SIGNALS OF DIFFERENT FREQUENCIES HAVE DIFFERENT VELOCITIES BOTH IN AND OUT OF A VACUUM.

I WILL BE USING A UNIT CALLED INDEX OF REFRACTION. THIS IS A NUMBER, USUALLY A FRACTION, THAT IS DIVIDED INTO 1.000 OR 1.00 OF THE SPEED OF LIGHT IN A VACUUM, WHICH IS 1/186,000 MILES PER SECOND, WHERE IT IS THE INDEX OF REFRACTION.

AN INDEX OF REFRACTION IS USED TO FIND THE SPEED OF A RADIO WAVE. IN ANY MEDIUM EXCEPT THAT OF A VACUUM SINCE IT'S $\neq 1$. OR HOPE IT'S CLEAR.

A MCROW SIGNALS IN OF AIR BECOMES SMALLER WITH DECREASING PRESSURE AND MOISTURE CONTENT BUT LARGER WITH DECREASING TEMPERATURE. SO IN A NORMAL ATMOSPHERE, THE HIGHER IN ALTITUDE YOU GO THE SMALLER WILL BECOME EACH OF THE VARIABLES JUST NAMED. THE RESULT, UNDER NORMAL CONDITIONS, IS THAT MCROW SIGNALS DECREASES UNIFORMLY WITH HEIGHT UP TO APPROX. 20,000 TO 25,000 FEET.

WITH THE INCREASE OF HEIGHT ANOTHER SITUATION EXISTS. THE PATHS FOLLOWED BY MCROW SIGNALS ARE ALMOST ALWAYS CURVED.

THE SPEED AT WHICH A MCROW SIGNAL TRAVELS THROUGH THE ATMOSPHERE DEPENDS ON THE THREE VARIABLES. USUALLY THE HIGHER THE TEMPERATURE, THE FASTER THE SIGNAL. SAME WITH LOWERING THE WATER CONTENT AND THE ATMOSPHERIC PRESSURE. SO WHAT HAPPENS WITH AN INCREASE IN ALTITUDE? AN INCREASE IN THE SPEED OF THE SIGNAL.

NOW BECAUSE THE SPEED OF A SIGNAL INCREASES WITH AN INCREASE OF ALTITUDE THE MCROW SIGNAL WILL HAVE A TENDENCY TO CURVE IN A DOWNWARD DIRECTION. IT WILL TAKE THIS A LITTLE CLEARER. LET US TAKE A RAY FROM SO THAT THE PHASE OF THE SIGNAL IS THE SAME ACROSS THE RAY FROM. AS THE RAY TRAVELS ALONG THE RAY WILL BE GOING FASTER THAN THE BOTTOM, BECAUSE IT'S HIGHER IN ALTITUDE. THIS WILL CURVE THE RAY TO THE DOWN JUST A LITTLE BIT AS IT TRAVELS ALONG.

RADIO WAVES ARE ALSO BENT WHEN THEY

PASS FROM ONE MEDIUM TO ANOTHER MEDIUM THAT HAS A DIFFERENT DENSITY. BECAUSE WAVES ARE BENT FROM LOWER DENSITY MEDIUM INTO A HIGHER ONE OUR ATMOSPHERE CAN CAUSE RADIO WAVES TO BE BENT AROUND THE EARTH. NOW A CURVED PATH LIKE THIS IS CALLED A DUCT. STRANGE AS IT MAY SEEM TO SOME OF YOU, THE GREATER WILL BE YOUR CHANCES OF GETTING INTO A DUCT WHICH WILL GIVE YOU ABNORMAL PROPAGATION EFFECTS.

THE THREE VARIABLES HAVE A HAND IN CAUSING THESE DUCTS THAT I HAVE MENTIONED. UNDER NORMAL CONDITIONS WHERE TEMP. AND MOISTURE DECREASE UNIFORMLY WITH ALTITUDE DUCTS CANNOT BE FORMED; HOWEVER WHEN A GREAT VARIATION OF MOISTURE AND TEMP. EXIST TOGETHER THEN A DUCT IS LIKELY TO EXIST, TOO.

THERE ARE TWO OTHER PROBLEMS THAT THE ATMOSPHERE PRESENTS TO MCROW AND THEY ARE 1. SCATTERING THE MCROW SIGNALS OR 2. THE ABSORPTION OF THEM.

CONT. PAGE 6

EVERYTHING IN REAL ESTATE

HOMES LAND RANCHES
SALES and RENTALS

ED POMPEA
635-7554

BILL KING
634-4751

**MCNEILLEY
REALTY**

596-8200
3803 PALMER PARK BLVD.
(NEAR THE RUSTIC HILLS SHOPPING CENTER)

THE SCATTERING OF HIGH SIGNALS IS CAUSED BY THE PRESENCE OF DUST, WATER, SNOW, OR ICE IN THE AIR. THEY ARE AS REFLECTORS AND CAUSE THE SIGNAL TO SCATTER IN ALL DIRECTIONS. A SMALL PART OF THE SIGNAL CAN SOMETIMES REFLECT BACK UPON ITSELF BUT MOST OF IT WILL BE RADIATED AT RIGHT ANGLES OF THE ORIGINAL PATH, AS YOU GO HIGHER IN FREQ. YOU WILL FIND THAT THIS EFFECT BECOMES WORSE. WHEN THE FREQ. REACHES ME A BALD AREA RAIN, EVEN FOG CAN TAKE THE EQUIPMENT USELESS.

ABSORBING IS A CONTINUING PROCESS TO
MUCH FREQ. ORIGINATING FROM THE T BAND OR
THAT ARE RELATED, SIGHT AND HEAR
VAPOR IS INSISTENT, THAT CAN OSCILLATE
AT THESE FREQS. AND THEY ARE THE
MUCH. SIGHTS. I OBSERVED THAT
ABOVE HIGHER MCH. FREQS. MUCH LIKE A
TUNED CIRCUIT IS A VAPOR. THE FREQU
OSCILLATE MUCH AND SIGHTS ARE
PERIODICALLY IN A MCH. AND ABSORPTION
BAND FREQUENCIES ARE THE SAME AS
OSCILLATIONS. THE SIGHTS ARE IN AND IN
SIGHT. MCH. POSSIBLY INHERENT AND IS
ALMOST SEEN AS A BLACK BIRD).

USUALS IN DRAWING PORT CHARTS ARE: JR
ACROSS COMMUNICATIONS ARE DRAWN AS IF
A PLANE FLYING FROM ONE PORT TO ANOTHER
WILL FLY THE 145 ROUTE. THIS CAN BE DONE
BY DRAWING A LINE OF SIGHT IN ONE DIRECTION
AND DRAWING A LINE OF SIGHT IN THE
OTHER DIRECTION. THE LINE OF SIGHT
FOR LIGHT VESSELS AND AIRCRAFT ARE DRAWN AS
A LINE OF SIGHT AS A PLANE
CUTTING THROUGH A CLOUD. IN A DARK SIGNAL
ROUTE, DRAWINGS SHOW THE LIGHT
IN DISTRIBUTION. (THIS IS 4/3 ACTUAL SIZE)
ARE USED. THIS IS SO THAT WHEN OTHERS
ARE DRAWING PLANS THE COURSE OF THE DARK
SIGNAL WILL BE MADE IN TO ACCOUNT AND
THE SIGNAL PATH CAN BE SHOWN AS A
STRAIGHT LINE. SO WHEN WORKING WITH MCRW
IT IS DESIRABLE TO USE A PROFILE DIAGRAM
BASED ON THE MODIFIED EARTH. (AGAIN
BECAUSE OF THE VARS INVOLVED I AM NOT
GOING TO BE ABLE TO DO THIS. THE PROFILE

DIAGRAM BUT AT THE END OF THIS SERIES I WILL PUT IN THE EQUATIONS NEEDED FOR THOSE OF YOU WHO ARE INTERESTED). THERE ARE OTHER LIMITATIONS ON THE MAXIMUM RANGE OF MCRW COMMUNICATION THAT HAVEN'T BEEN MENTIONED YET. WE NOW KNOW THAT THERE CAN BE NO COMMUNICATION BETWEEN TWO MCRW SITES UNLESS THERE IS AN UNOBSTRUCTED RADIO LINE OF SIGHT (A MILLER HIL CURVE). BUT THIS WILL NOT MEAN THAT COMMUNICATION WILL BE POSSIBLE WHEN THE LINE OF SIGHT IS CLEAR. THINGS LIKE POOR RECEIVER SENSITIVITY, LOW TRANSMITTER POWER OVER A 130 DEGREE REFLECTIVE HAZE OF DUST OR SMOKE CAN CANCEL OUT THE DIRECT RAY AND RESULT IN NO COMMUNICATIONS. OF COURSE WE CAN'T FORGET OUR ATMOSPHERIC CONDITIONS LIKE SO. IT IS NECESSARY TO BE ABLE TO PREDICT THE PROPERTIES OF THE ATMOSPHERE OF THE PATH JOURNEY AND THE TYPE OF EQUIPMENT NEEDED TO PERMIT THE MOST RELIABLE COMMUNICATION POSSIBLE.

ARRL OFFICIAL BULLETINS

387 August 24.
Announcement is hereby made of two actions taken concerning the DXCC. Effective October 1, the Maria Theresa listing is removed from the Countries List and all credits which have been given will be annulled. Also effective October 1, Minerva Reefs will become a deleted country and only contacts made prior to July 15, 1972 will be creditable towards this listing. The Kingdom of Tonga has annexed Minerva Reefs. Because Minerva is less than 500 miles from Tonga, it no longer meets the criteria for separate status. These actions are in accord with recommendations made by the ARRL DX Advisory Committee. Full details appear on page 106 of September QST.

#389 September 7.
Two new editions of popular ARRL directories are now available for distribution. The current revision of the Repeater Directory, detailing 615 repeaters, requires an addressed envelope larger than 6 by 9 inches, with 24 cents postage for first class mailing. The 1972 Net Directory can be sent first class in an addressed legal size envelope with 16 cents return postage. For both directories, send the larger envelope with 32 cents postage. Directories have been mailed to those filing earlier requests.

THE CLASSICAL PRACTICE IN ENGLISH
LITERATURE. AND THE CLASSICAL INFLUENCE ON
SHAKESPEARE AND HIS CONTEMPORARIES.
BY ERNST BORNMILLER. IN SEVEN PARTS.
VOLUME I. PART I. 1560-1580. 80 PAGES.
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ROSIE'S REPORTINGS

by
Rosemarie Lewis
WA0MNL

COMMITTEES APPOINTED

NOMINATING COMMITTEE

Don Emery - WØDYM - Chairman
To choose 2 more members to assist him

2 - METER FM COMMITTEE

Glyde Still
Pete and Ida Demario - KØUDG - WAØNTA
Bob Sayers - WAØFA
David Givan - KØLRF
George Kowalski - WAØCH
Oak Stockton - KØROL - also acting representative to CCARC

2 - CHILD HI. COMMITTEE

"Doc" Cornell - WAØJL
"Irv" Ebel - WAØKIN

SEARCH AND RESCUE - 1st Baco County

George Kowalski - WAØCH

COMM. ASSISTANT - COMM. DIRECTOR

Bob Powers - Coordinator - WAØJTC

RAICES

Dean Jaynes - WAØPJI - radio Officer
Eldon Lewis - assistant radio Officer
WAØJIA

MAILS

Pete Demario - KØUDG

TECHNICAL INSTRUCTION COMMITTEE

John Summers Sr. - WAØHNN
Charles Myers - WAØZCS
Elmer Schladweiler - WAØJNY
Will Gordon - WØNHF

HISTORIANS

Jim Reynolds - WAØJME

"Doc" Cornell - WØJCT

Gene Bacon - WØCNY

AUCTION COMMITTEE

Pete Demario - KØUDG
Bill Haskins - KØCEN
Oak Stockton - KØROL
Ida Demario - WAØNTA

AUDITING COMMITTEE

Bill Haskins - KØCEN
Art Mayer - WAØAEH

INTERFERENCE COMMITTEE

James Don Carlos - WØITU - chairman
To choose 2 members to assist

YL COMMITTEE

Shea Allison - WAØYD/Ø
Ida Demario - WAØJL
Linda Vidmar - WAØJL

WCOOP COMMITTEE (CURRENT LISTS OF OPERATORS)

Iris Summers
Ida Demario
Alene Green
Liz Don Carlos
Shirley Kowalski

HOSPITALITY COMMITTEE

"Marty" Brown - WAØVH/Ø
Ida Demario - WAØJL
Irene Rompa - WAØJL
Ross Ebel

STAFF

James Don Carlos - WØITU
Dean Jaynes - WAØPJI
Dale Green - WØLDV
Irv Ebel - WØKIN
Maury Wunderlich - WAØYNP
Harlan Park - WAØYVS
Chuck Lucas Jr. - WAØMN
Fred Palmblad - WAØCIR

115

Jayne Brown - WAØPV/Ø
Mike Stansbury - WAØHCK

CONTEST COMMITTEE

Dale Green - WØLDV
Wayne Brown - WAØPV/Ø

PSK

Alie Payne - WØLNU/ WAØJL
Ad Rompa - WAØLR
Wanda Payne - Typist

CCARC

Charles Myers - WAØZCS
Oak Stockton - KØROL

FIELD DAY

"Doc" Cornell - WØJCT
ARRL VICE DIRECTOR FOR PSK
"Irv" Ebel - WAØJL

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"It Speaks for Itself"

signal/cw

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20

NOT AUTHORIZED

ZERO BEAT EDITOR
PIKES PEAK RADIO AMATEUR ASSN.: TNC

Winter GED
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633-9333 2nd

Eldon Lewis, WA/ERA
Rosie Lewis, WA/ERA
2018 W. Uintah
Colorado Springs 80

FIRST CLASS MAIL

NOVEMBER 1972

The logo is a stylized graphic. At the top, the word "Dikes" is written in a bold, italicized, sans-serif font. Below it, the word "Break" is written in a larger, bold, italicized, sans-serif font. A large, thin-lined circle is centered behind the text. A wavy line starts from the left, goes up and down, then loops back to the right, crossing the circle. Inside the circle, there is a graphic of a map of Colorado with the letters "D" and "B" superimposed on it. To the right of the circle, the word "Break" is written again in a smaller, bold, italicized, sans-serif font. At the bottom right, the text "RADIO AMATEUR ASSOC" is written vertically in a small, bold, sans-serif font.

A series of five wavy lines of varying thicknesses, rendered in a dark grey color, arranged horizontally.

A 1971 U.S. postage stamp featuring a portrait of George Washington, with a postmark from New York, N.Y. dated May 15, 1971.

A series of five wavy lines, each with a small horizontal tick mark near the top, representing a signal waveform.